

REMARKS

By this Amendment, Applicant amends claim 9 and adds claims 14-19.

Accordingly, claims 1-19 remain in the application.

Reexamination and reconsideration are respectfully requested in view of the following remarks.

35 U.S.C. § 103

The Office Action rejects: claims 1-3, 6 and 9-11 under 35 U.S.C. § 103 over Hama et al. U.S. Patent 5,792,261 (“Hama”) in view of Aruga U.S. Patent 5,779,848 (“Aruga”); claims 4, 7 and 12 under 35 U.S.C. § 103 over Hama in view of Aruga and Li et al. U.S. Patent 6,009,830 (“Li”); and claims 5, 8 and 13 under 35 U.S.C. § 103 over Hama in view of Aruga and Yin et al. U.S. Patent 6,352,049 (“Yin”).

Applicant respectfully traverses those rejections for at least the following reasons.

Claim 1

Among other things, the chamber structure of claim 1 includes a segregation wall part having a portion made of quartz opposite to the plasma chamber and having a portion made of a non-quartz ceramic opposite to the etch chamber, the segregation wall part separating the etch chamber from the plasma chamber.

The Office Action fairly admits that Hama does not disclose any chamber structure having this combination of features, but instead states that it would have been obvious to modify Hama to include this combination of features, in view of Aruga.

Applicant respectfully disagrees, and also respectfully traverses the proposed combination of Hama and Aruga as lacking any proper motivation in the prior art.

At the outset, Aruga discloses a quartz window separating a heater and a plasma processing chamber with a very thin coating of aluminum nitride. The

Office Action states that the supposed motivation for the proposed modification would have been to “protect the segregation wall from plasma.” However, very clearly, if anything this would only have motivated one to have made the portion of the wall opposite the plasma generating chamber to have the very thin coating of aluminum nitride, not to add the thin coating to the portion opposite the etching chamber. In this regard, it is instructive to note that Aruga only coats the portion of the glass that is opposite to the interior of the chamber 10 where the plasma is generated!

Furthermore, Aruga does not disclose or suggest coating a window, wall, or any other structure separating a plasma generation chamber and a process chamber with aluminum nitride. More specifically, as is well known and discussed in paragraph 30 of the specification, if partition plate 14 of Hama were to be coated with a ceramic coating, then it would become very difficult to form the plasma in the chamber 16. So one skilled in the art would not have been motivated to have modified Hama to coat its partition plate 14 with a ceramic on the side facing the chamber 16 where plasma is generated.

Accordingly, Applicant respectfully traverses the proposed combination of Hama and Aruga as lacking any motivation in the prior art.

In this regard, Applicant also respectfully traverses the statement in the Office Action that element 18 of Hama corresponds to a chamber in which plasma is generated, as recited in claim 1. Applicant sees nothing in Hama that discloses that any plasma is formed in chamber 18. Instead, Hama discloses that:

When high frequency of 13.56 MHz, for example, is applied to the coils 106a and 106b under this state, inducted electromagnetic fields are formed in the process chamber 16 and helium gas is thus transformed into plasma. Ions or

Hama at col. 7, lines 40-43. That is, Hama discloses (as one skilled in the art would understand from inspection of FIG. 1 which shows that the process gases are never applied to chamber 18), that plasma is generated in chamber 16, and

Hama does not disclose or suggest that chamber 18 which contains the induction electrode is a chamber “in which plasma is generated” as recited in claim 1. Accordingly, partition 15 of Hama cannot be a segregation wall part separating the etch chamber from the plasma chamber. In contrast, inspection of FIG. 1 of the present application shows that the process gas to be plasmatized is indeed provided through plasma chamber 30.

Accordingly, for at least these reasons, Applicant respectfully submits that claim 1 is patentable over any proper combination of the cited references.

Claims 2-3

Claims 2-3 depend from claim 1 and are deemed patentable for at least the reasons set forth above with respect to claim 1.

Claim 4

Claim 4 depends from claim 1. Applicant respectfully submits that Li does not remedy the shortcomings of Hama and Aruga as set forth above with respect to claim 1. Accordingly, claim 4 is deemed patentable for at least the reasons set forth above with respect to claim 1, and for the following additional reasons.

In the structure of claim 4, a portion of the segregation wall part opposite to the etch chamber includes a heater.

The Office Action fairly admits that no combination of Hama and Aruga discloses a portion of the segregation wall part opposite to the etch chamber includes a heater. Instead, the Office Action proposes to combine Li with Hama and Aruga.

However, Applicant respectfully submits that Li merely discloses providing a heater. Period. Li does not disclose or suggest providing a segregation wall part that includes the heater. So no combination of Hama, Aruga, and Li would provide a structure where a portion of the segregation wall part opposite to the etch chamber includes a heater.

Accordingly, for at least these additional reasons, Applicant respectfully submits that claim 4 is patentable over the cited prior art.

Claim 5

Claim 5 depends from claim 1. Applicant respectfully submits that Yin does not remedy the shortcomings of Hama and Aruga as set forth above with respect to claim 1. Accordingly, claim 5 is deemed patentable for at least the reasons set forth above with respect to claim 1, and for the following additional reasons.

Applicant respectfully traverses the proposed combination of Yin with Hama and Aruga as proposed in the Office Action as lacking any proper motivation or suggestion in the prior art. The Office Action cites nothing in either Yin or any other prior art reference that would have motivated one to modify Hama as proposed by the Office Action. The unsupported statement that Yin's arrangement would have been a "suitable alternative" amounts to nothing more than an allegation that the two references *can* be combined. However M.P.E.P. § 2143.01 provides that:

"FACT THAT REFERENCES CAN BE COMBINED OR
MODIFIED IS NOT SUFFICIENT TO ESTABLISH PRIMA
FACIE OBVIOUSNESS. The mere fact that references can be
combined or modified does not render the resultant combination
obvious unless the prior art also suggests the desirability
of the combination. In re Mills, 916 F.2d 680, 16 USPQ2d 1430
(Fed. Cir. 1990)."

(emphasis added). Here, the Office Action cites nothing suggesting the desirability of the proposed combination. Meanwhile, a rejection under 35 U.S.C. § 103 must be based on objective evidence of record, and cannot be supported merely on subjective belief and unknown authority. M.P.E.P. § 2144.03 provides that:

"there must be some form of evidence in the record to support an

assertion of common knowledge. See In re Lee, 277 F.3d at 1344-45, 61 USPQ2d at 1434-35 (Fed. Cir. 2002); Zero, 258 F.3d at 1386, 59 USPQ2d at 1697 (holding that general conclusions concerning what is “basic knowledge” or “common sense” to one of ordinary skill in the art without specific factual findings and some concrete evidence in the record to support these findings will not support an obviousness rejection). ”

(Emphasis added). See also In re Lee, 277 F.3d at 1343-44, 61 USPQ2d at 1433-34 (Fed. Cir. 2002) (the examiner’s finding of whether there is a teaching, motivation or suggestion to combine the teachings of the applied references must not be resolved based on “subjective belief and unknown authority,” but must be “based on objective evidence of record.”).

No such concrete evidence has been provided by the Examiner here, nor did the Examiner submit an affidavit as required by 37 C.F.R. § 1.104(d)(2) if this proposed motive were based on facts within his personal knowledge (see M.P.E.P. § 2144.03). Applicant requests such an affidavit if this rejection continues to be maintained based a motive for modification not explicitly suggested in the prior art.

Accordingly, for at least these additional reasons, Applicant respectfully submits that claim 5 is patentable over the cited prior art.

Claim 6

Among other things, chamber structure of claim 6 includes a first chamber wherein an etching process is performed, a second chamber in which plasma is generated, and a segregation wall part having a portion made of quartz that is a bottom of the second chamber, and having a portion made of non-quartz ceramic that is a ceiling of the first chamber.

As explained above with respect to claim 1: (1) chamber 18 of Hama is not a chamber where “plasma is generated;” and (2) nothing in Aruga would have motivated one skilled in the art to have modified Hama to coat its partition plate 14 with a ceramic on the side facing the etch chamber 16 where plasma is

generated.

Accordingly, for at least these reasons, Applicant respectfully submits that claim 6 is patentable over the cited prior art.

Claim 7

Claim 7 depends from claim 6. Applicant respectfully submits that Li does not remedy the shortcomings of Hama and Aruga as set forth above with respect to claim 6. Accordingly, claim 7 is deemed patentable for at least the reasons set forth above with respect to claim 6, and for the following additional reasons.

In the structure of claim 7, a portion of the segregation wall part opposite to the etch chamber includes a heater. As explained above with respect to claim 4, no combination of Li with Hama and Aruga would produce a structure including such a feature.

Accordingly, for at least these additional reasons, Applicant respectfully submits that claim 7 is patentable over the cited prior art

Claim 8

Claim 8 depends from claim 6. Applicant respectfully submits that Yin does not remedy the shortcomings of Hama and Aruga as set forth above with respect to claim 6. Accordingly, claim 8 is deemed patentable for at least the reasons set forth above with respect to claim 6, and for the following additional reasons.

As explained above with respect to claim 5, Applicant respectfully traverses the proposed combination of Yin with Hama and Aruga as proposed in the Office Action as lacking any proper motivation or suggestion in the prior art.

Accordingly, for at least these additional reasons, Applicant respectfully submits that claim 8 is patentable over the cited prior art.

Claim 9

Among other things, chamber structure of claim 9 includes an upper chamber having a high frequency radiation element and a process gas supply line disposed therein for supplying a process gas to the lower etching chamber; and a segregation wall separating the upper chamber and the lower etching chamber, the

segregation wall part having a portion made of quartz that is a bottom wall of the upper chamber, and a portion made of non-quartz ceramic that is a ceiling wall of the lower chamber.

At the outset, Hama does include an upper chamber having a high frequency radiation element and a process gas supply line disposed therein for supplying a process gas to a lower etching chamber. There is no reason suggested in the cited prior art for modifying Hama to include such an upper chamber. And as explained above with respect to claim 1, nothing in Aruga would have motivated one skilled in the art to have modified Hama to coat its partition plate 14 with a ceramic material on the side facing the etch chamber 16 where plasma is generated.

Accordingly, for at least these reasons, Applicant respectfully submits that claim 9 is patentable over the cited prior art.

Claims 10-11

Claims 10-11 depend from claim 9 and are deemed patentable for at least the reasons set forth above with respect to claim 9, and for the following additional reasons. With respect to claim 10, as explained above with respect to claim 1, chamber 18 of Hama is not a chamber where “plasma is generated.” Accordingly for at least this additional reason, claim 10 is deemed patentable over the cited prior art.

Claim 12

Claim 12 depends from claim 9. Applicant respectfully submits that Li does not remedy the shortcomings of Hama and Aruga as set forth above with respect to claim 9. Accordingly, claim 12 is deemed patentable for at least the reasons set forth above with respect to claim 9, and for the following additional reasons.

In the structure of claim 12, a portion of the segregation wall part includes a heater. As explained above with respect to claim 4, no combination of Li with Hama and Aruga would produce a structure including such a feature.

Accordingly, for at least these additional reasons, Applicant respectfully

submits that claim 12 is patentable over the cited prior art

Claim 13

Claim 8 depends from claim 9. Applicant respectfully submits that Yin does not remedy the shortcomings of Hama and Aruga as set forth above with respect to claim 6. Accordingly, claim 13 is deemed patentable for at least the reasons set forth above with respect to claim 9, and for the following additional reasons.

As explained above with respect to claim 5, Applicant respectfully traverses the proposed combination of Yin with Hama and Aruga as proposed in the Office Action as lacking any proper motivation or suggestion in the prior art.

Accordingly, for at least these additional reasons, Applicant respectfully submits that claim 13 is patentable over the cited prior art.

NEW CLAIMS 14-19

New claims 14-19 depend variously from claims 1, 6 and 9 and are therefore deemed patentable over the cited prior art for at least the reasons set forth above with respect to claims 1, 6 and 9, respectively, and for the following additional reasons.

Claims 14, 16 and 18

Among other things, the structures of claims 14, 16 and 18 all include a gas shower housing installed in the segregation wall between the portion made of quartz and the portion made of a non-quartz ceramic.

Nothing in any of the cited prior art references discloses or suggests providing a gas shower head between a portion of a segregation wall made of quartz and a portion of the segregation wall made of a non-quartz ceramic.

Accordingly, claims 14, 16 and 18 are deemed patentable for at least this additional reason.

Claims 15, 17, and 19

Among other things, the structures of claims 15, 17 and 19 all include a heater installed in the segregation wall between the portion made of quartz and the

portion made of a non-quartz ceramic.

Nothing in any of the citer prior art references discloses or suggests providing a heater between a portion of a segregation wall made of quartz and a portion of the segregation wall made of a non-quartz ceramic.

Accordingly, claims 15, 17 and 19 are deemed patentable for at least this additional reason.

CONCLUSION

In view of the foregoing explanations, Applicant respectfully requests that the Examiner reconsider and reexamine the present application, allow claims 1-19, and pass the application to issue. In the event that there are any outstanding matters remaining in the present application, the Examiner is invited to contact Kenneth D. Springer (Reg. No. 39,843) at (571) 283-0720 to discuss these matters.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies to charge payment or credit any overpayment to Deposit Account No. 50-0238 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17, particularly extension of time fees.

Respectfully submitted,

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